

## CLAIMS

1. A kit for reduction of exhaust emissions from EMD 645 two cycle diesel engines having two banks of cylinders and an aftercooler mount connecting with an airbox for each cylinder bank, the kit comprising in combination:
  - 5 a high injection efficiency unit fuel injector for each cylinder of the engine, the injector providing retarded specific fuel injection timing and increased injection pressure with resulting improved fuel atomization; and
  - a four pass counterflow water to air aftercooler for each bank of cylinders providing reduced airbox temperatures;
  - 10 the combination when installed providing reduced NOx emissions.
2. A kit as in claim 1 wherein the fuel injectors provide increased injection pressure and improved fuel atomization which permits retarding injection timing without adversely affecting engine performance and smoke.
3. A kit as in claim 2 wherein the injectors provide the specified timing retard without changing the original injector timing settings.
4. A kit as in claim 2 wherein the injectors include reduced needle valve weight, smaller fuel volume between the needle valve and plunger, and reduced sac volume as compared to the original injectors.
5. A kit as in claim 1 wherein the aftercoolers are effective to lower airbox temperatures by approximately 20% and NOx emissions by about 7% compared to the original aftercoolers.
6. A kit as in claim 1 wherein the aftercoolers are mountable in the same space occupied by the original aftercoolers.

7. A kit as in claim 1 including replacement piping for connecting the aftercoolers with the engine cooling system.

8. A kit as in claim 1 including replacement pistons increasing the cylinder compression ratio from about 14.5/1 to about 16/1 for improving fuel efficiency.